a.) Amendment to the Claims

1. (Currently Amended) An isolated stem cell obtained from adult bone marrow ~~derived stem cell~~, wherein said stem cell can differentiate into at least two cells, one of which is a cardiomyocyte.

Claims 2-5 (Canceled)

6. (Currently Amended) The isolated stem cell according to claim 1, which can also differentiate into at least one of an adipocyte, a skeletal muscle cell, an osteoblast, a vascular endothelial cell, a nervous system cell, and a hepatic cell.

7. (Currently Amended) The isolated stem cell according to claim 1, ~~wherein the cell~~ which is a multipotential stem cell ~~which~~ that differentiates ~~in adult tissues~~ onto any adult tissue cell.

8. (Currently Amended) The isolated stem cell according to claim 1, wherein the stem cell is CD117-positive and CD140-positive.

9. (Currently Amended) The isolated stem cell according to claim 8, wherein the stem cell is further CD34-positive.

10. (Currently Amended) The isolated stem cell according to claim 9, wherein the stem cell is further CD144-positive.

11. (Currently Amended) The isolated stem cell according to claim 9, wherein the stem cell is further CD144-negative.

12. (Currently Amended) The isolated stem cell according to claim 8, wherein the stem cell is further CD34-negative.

13. (Currently Amended) The isolated stem cell according to claim 12, wherein the stem cell is further CD144-positive.

14. (Currently Amended) The isolated stem cell according to claim 12, wherein the stem cell is further CD144-negative.

15. (Currently Amended) The isolated stem cell according to claim 10, wherein the stem cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

16. (Currently Amended) The isolated stem cell according to claim 11, wherein the stem cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

17. (Currently Amended) The isolated stem cell according to claim 12, wherein the stem cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

18. (Currently Amended) The isolated stem cell according to claim 13, wherein the stem cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

19. (Currently Amended) The isolated stem cell according to claim 1, which does not take up Hoechst 33342.

Claim 20 (Cancelled).

21. (Currently Amended) The isolated stem cell according to claim 1, which differentiates into a ventricular cardiac muscle cell.

22. (Currently Amended) The isolated stem cell according to claim 1, which differentiates into a sinus node cell.

23. (Currently Amended) The isolated stem cell according to ~~claim 1~~ any one of claims 1, 6-19, 21 or 22, wherein the bone marrow is ~~derived from a mammal~~ mammalian.

24. (Currently Amended) The isolated stem cell according to claim 23, wherein the mammal is selected from the group consisting of a mouse, a rat, a guinea pig, a hamster, a rabbit, a cat, a dog, a sheep, a swine, cattle, a goat and a human.

25. (Currently Amended) The isolated stem cell according to claim 1, which is mouse ~~bone marrow-derived multipotential stem cell~~ BMSC (FERM BP-7043).

26. (Currently Amended) The isolated stem cell according to ~~claim 1~~ claim 24, which differentiates into a cardiomyocyte by demethylation of a chromosomal DNA of the stem cell.

27. (Currently Amended) The isolated stem cell according to claim 26, wherein ~~the~~ demethylation is carried out by administering at least one selected from the group consisting of demethylase, 5-azacytidine, and dimethyl sulfoxide~~, DMSO~~.

28. (Original) The cell according to claim 27, wherein the demethylase comprises the amino acid sequence represented by SEQ ID NO:1.

Claims 29-37 (Cancelled).

38. (Currently Amended) The isolated stem cell according to ~~claim 1~~ claim 24, wherein ~~the~~ differentiation is inhibited by ~~a~~ fibroblast growth factor-2~~, FGF-2~~.

39. (Currently Amended) The isolated stem cell according to claim 38, wherein the FGF-2 comprises the amino acid sequence represented by ~~SEQ ID NO:7 or 8~~ SEQ ID NOS:7 or 8.

Claim 40 (Cancelled).

41. (Currently Amended) The isolated stem cell according to ~~claim 1~~ claim 24, which differentiates into a cardiac muscle by transplantation into a blastocyst or by co-culturing with a cardiomyocyte.

Claim 42 (Cancelled).

43. (Currently Amended) The isolated stem cell according to ~~claim 1~~ claim 24, which differentiates into an adipocyte by administering a compound having a thiazolidione skeleton.

44. (Currently Amended) The isolated stem cell according to claim 43, wherein the thiazolidione compound is at least one selected from the group consisting of troglitazone, pioglitazone, and rosiglitazone.

Claims 45-46 (Cancelled).

47. (Currently Amended) A method for differentiating a cell into a cardiac muscle, comprising ~~selecting a~~ selecting an isolated stem cell according to claims 1, 6-19 or 21-28 and administering thereto a chromosomal DNA-dimethylating agent.

48. (Currently Amended) A method for redifferentiating the isolated stem cell according to claim 9 into a cell which is CD34-negative, comprising selecting said stem cell and administering thereto a chromosomal DNA-dimethylating agent.

49. (Currently Amended) A method for redifferentiating a cell comprising

selecting ~~a cell which~~ an isolated stem cell obtained from adult bone marrow, which cell is CD117-negative and CD140-positive,

administering thereto a chromosomal DNA-dimethylating agent and

obtaining a cell according to claim 8.

50. (Original) The method according to claim 48 or 49, wherein the chromosomal DNA-dimethylating agent is selected from the group consisting of a demethylase, 5-azacytidine, and DMSO.

51. (Currently Amended) The method according to claim 50, ~~wherein the demethylase comprises~~ comprising administering a demethylase comprising the amino acid sequence represented by SEQ ID NO:1.

52. (Currently Amended) A method for differentiating a cell into a cardiac muscle comprising

selecting the isolated stem cell according to any one of claims 1, 6-19 or 21-28 and applying thereto a factor which is expressed in a cardiogenesis region of a fetus or a factor which acts on differentiation into a cardiomyocyte in a cardiogenesis stage of a fetus.

53. (Currently Amended) The method according to claim 52, ~~wherein the factor which is expressed in a cardiogenesis region of a fetus or the factor which acts on differentiation into a cardiomyocyte in a cardiogenesis stage of a fetus is~~ comprising administering at least one factor selected from the group consisting of a cytokine, an adhesion molecule, a vitamin, a transcription factor, and an extracellular matrix.

54. (Currently Amended) The method according to claim 53, ~~wherein the cytokine is at least one~~ comprising administering at least one cytokine selected from the group consisting of a platelet-derived growth factor, ~~PDGF;~~ a fibroblast growth factor-8, ~~FGF-8;~~ an endothelin 1, ~~ET1;~~ a midkine; and a bone morphogenetic ~~factor, BMP-4~~ factor-4.

55. (Currently Amended) The method according to claim 54, wherein PDGF, FGF-8, ET1, midkine, and BMP-4 respectively comprise the amino acid ~~sequence~~ sequences represented by SEQ ID NOS:3 or 5, the amino acid sequence represented by SEQ ID NO:64, the amino acid sequence represented by SEQ ID NO:66, the amino acid sequence represented by SEQ ID NO:68, and the amino acid sequence represented by SEQ ID NO:70~~, respectively~~.

56. (Currently Amended) The method according to claim 53, ~~wherein the adhesion molecule is at least one member~~ comprising administering at least one

adhesion molecule selected from the group consisting of a gelatin, a laminin, a collagen, and a fibronectin.

57. (Currently Amended) The method according to claim 53, ~~wherein the vitamin is~~ comprising administering retinoic acid.

58. (Currently Amended) The method according to claim 53, ~~wherein the transcription factor is at least one member~~ comprising administering at least one transcription factor selected from the group consisting of Nkx2.5/Csx, GATA4, MEF-2A, MEF-2B, MEF-2C, MEF-2D, dHAND, eHAND, TEF-1, TEF-3, TEF-5, and MesPl.

59. (Currently Amended) The method according to claim 58, wherein Nkx2.5/Csx, GATA4, MEF-2A, MEF-2B, MEF-2C, MEF-2D, dHAND, eHAND, TEF-1, TEF-3, TEF-5, and MesPl respectively comprise the amino acid ~~sequence~~ sequences represented by SEQ ID NO:9, the amino acid sequence represented by SEQ ID NO:11, the amino acid sequence represented by SEQ ID NO:13, the amino acid sequence represented by SEQ ID NO:15, the amino acid sequence represented by SEQ ID NO:17, the amino acid sequence represented by SEQ ID NO:19, the amino acid sequence represented by SEQ ID NO:21, the amino acid sequence represented by SEQ ID NO:23, the amino acid sequence represented by SEQ ID NO:25, the amino acid sequence represented by SEQ ID

NO:27, the amino acid sequence represented by SEQ ID NO:29, the amino acid sequence represented by SEQ ID NO:62~~, respectively~~.

60. (Currently Amended) The method according to claim 53, ~~wherein the extracellular matrix is~~ comprising administering an extracellular matrix derived from a cardiomyocyte.

61. (Currently Amended) A method for differentiating a cell into an adipocyte comprising selecting the isolated stem cell according to any one of claims 1, 6-19 or 21-28 and applying thereto an activator of nuclear receptor PPAR-γ.

62. (Original) The method according to claim 61, wherein the activator is a compound having a thiazolidione skeleton.

63. (Currently Amended) The method according to claim 62, wherein the thiazolidione compound is at least one selected from the group consisting of troglitazone, pioglitazone, and rosiglitazone.

Claims 64-77 (Canceled)

78. (Currently Amended) A method for specifically transfecting a wild-type gene corresponding to a mutant gene in a congenital genetic disease ~~to a myocardium, comprising using the~~ of a heart comprising selecting the isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44 ~~into which the~~, and introducing a wild-type gene corresponding to a mutant gene in ~~a~~ the congenital genetic disease ~~of a heart has been introduced~~.

79. (Currently Amended) A therapeutic agent for a heart disease, comprising, as an active ingredient, the isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44 into which a wild-type gene corresponding to a mutant gene in a congenital genetic disease of a heart has been introduced.

80. (Currently Amended) A method for producing an antibody comprising selecting ~~a~~ the isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44, using the stem cell as an antigen and obtaining an antibody which specifically recognizes the stem cell.

81. (Currently Amended) A method for isolating ~~a~~ an isolated stem cell having the potential to differentiate into a cardiomyocyte according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44, comprising using an antibody ~~obtained by the method according to claim 80~~ which specifically recognizes the stem cell.

82. (Currently Amended) A method for obtaining a cell-surface antigen ~~specific for the cell according to any one of claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, comprising using the cell~~, comprising practicing the method according to claim 80, and characterizing the antigen recognized by the antibody that specifically identifies the stem cell.

83. (Currently Amended) A method for screening a proliferative factor ~~which proliferates the~~, comprising selecting an isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44, ~~comprising using the cell~~ administering materials to said stem cell and determining proliferation thereof.

84. (Currently Amended) A method for screening a factor ~~which induces the~~, comprising selecting an isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44 ~~to differentiate into a~~, administering materials to said stem cell and determining cardiomyocytes~~, cardiomyocyte, comprising using the cell~~.

85. (Currently Amended) A method for screening a factor ~~which immortalizes the~~, comprising selecting an isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44~~, comprising using the cell~~, administering materials to said stem cell and determining immortalized cells.

86. (Currently Amended) A method for immortalizing ~~the cell~~ a cell, comprising selecting an isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44, ~~comprising~~ and expressing a telomerase in the cell.

87. (Original) The method according to claim 86, wherein the telomerase comprises the amino acid sequence represented by SEQ ID NO:31.

88. (Currently Amended) ~~A therapeutic agent for a heart disease, comprising, as an active ingredient, the~~ An isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44 which has been immortalized by expressing a telomerase.

89. (Currently Amended) ~~The therapeutic agent~~ An isolated stem cell according to claim 88, wherein the telomerase comprises the amino acid sequence represented by SEQ ID NO:31.

90. (Currently Amended) A culture supernatant comprising the isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44.

91. (Currently Amended) A method for inducing a first cell to differentiate into a cardiomyocyte, comprising selecting a culture comprising the isolated stem cell according to any one of claims 1, 6-19 or 21-28, ~~30,~~ 38, 39, 41, 43 or 44, and applying ~~thereto a culture~~ to said first cell a supernatant ~~comprising any of said cells~~ from said culture.